

WE CLAIM:

1. An electro stimulation system for providing signals to a subject including:
at least one electrical power supply;
a first switching device for intermittently connecting the output of an
5 electrical power supply to one or more connection probes electrically connected
to the subject;
a second switching device for intermittently connecting one or more
connection probes electrically connected to the subject to form an electrical
current return path for current supplied by the electrical power supply; and
10 switching control devices connected to the first and second switching
devices;
wherein the intermittent connection of the output of an electrical power
supply or the intermittent formation of electrical current return paths vary during a
treatment and wherein the switching of the first and second devices occurs
15 independently of each other.
2. An electro stimulation system according to claim 1 wherein the electrical
power supply is connected to a current control circuit such that electrical current
supplied to the subject of the treatment is controlled.
3. An electro stimulation system according to claim 1 wherein the first and
20 second switching devices are multiplexing devices each connected to a
multiplexing control device.
4. A method of providing electro stimulation to a subject including the steps
of:
(a) attaching a plurality of electro stimulation probes in electrical
25 connection with the subject;
(b) selecting one or more of the probes for connection to at least one
electrical power supply thereby causing said one or more probes to become
active probes;

(c) selecting one or more of the probes for connection to an electrical current return path thereby causing said one or more probes to become return probes;

(d) connecting said one or more active probes to the at least one
5 electrical power supply and said one or more return probes to the electrical current return path thus causing an electrical current to flow between said active and return probes; and

(e) altering the selection of active and return probes; and

(f) repeating steps (d) and (e) until completion.

10 5. A method of providing electro stimulation to a subject according to claim 4 wherein the selection of active and return probes is varied during a single session of electro stimulation.

6. A method of providing electro stimulation to a subject according to claim 4 wherein only a single probe is selected as an active probe at any one time whilst
15 all other probes are selected as return probes.

7. A method of providing electro stimulation to a subject according to claim 4 wherein only a single probe is selected as a return probe whilst all other probes are selected as active probes.

8. A method of providing electro stimulation to a subject according to claim 4
20 wherein one or more probes are selected as active probes and one or more probes are selected as return probes.

9. A method of providing electro stimulation to a subject according to claim 4 wherein the selection and connection of active and return probes in method steps (d) and (e) are chosen such that during any period of substantially zero current
25 flow in one area, current flow is established in another area of the subject.

10. A method of providing electro stimulation to a subject according to any of claims 4 to 9 wherein the method is effected with an apparatus consisting of only one electrical power supply that is used for the purpose of providing electro stimulation signals to the subject.

5 11 A method of providing electro stimulation to a subject according to of claim 4 wherein the step of attaching a plurality of electro stimulation probes in electrical connection with the subject is effected by the inclusion of a predetermined probe arrangement for a particular part of the subject in a piece of material that is placed over the area requiring electro stimulation such that the
10 probes are placed in connection with the subject at the approximate required probe locations.

12. A method of providing electro stimulation to a subject according to claim 11 wherein the piece of material including a predetermined probe arrangement is shaped substantially to conform with the shape of the subject's face.

15 13. A controlled electrical signal supply for supplying electrical currents to a subject, said electrical current flowing through an area of the subject by connection of same with at least one active and return probe wherein,
an electrical power supply is connected to the at least one active probe;
a first electrical resistance is connected in parallel with the active and
20 return probes; and
the junction between the return probe and the first resistance is connected to a ground reference through a controllable variable conductance network.

14. A controlled electrical signal supply according to claim 13 wherein the first electrical resistance is selected such that it is significantly greater than the
25 expected electrical resistance between an active and return probe in the area of the subject.

15. A controlled electrical signal supply according to claim 13 wherein the variable conductance network includes a conductance path formed by a collector-emitter path through a transistor in series connection with a second electrical resistance such that the voltage at the junction of the emitter and the second
5 resistance varies proportionally with the electrical current flowing through the area of the subject.

16. A controlled electrical signal supply according to claim 15 wherein the junction between the emitter and the second electrical resistance is connected to a control signal network to enable the generation of a control signal for the base
10 input of the transistor.

17 A controlled electrical signal supply according to claim 16 wherein the control signal network includes an operational amplifier receiving one input from the conductance network connected to the junction of the emitter and the second resistance and a second input from a digital to analogue converter.

15 18. A controlled electrical signal supply according to claim 17 wherein the operational amplifier is configured as a differential amplifier with the input from the digital to analogue converter connected to the non-inverting input and the output from the conductance network thus providing a voltage proportional to the electrical current flowing through the area under treatment connected to the
20 inverting input of the differential amplifier.

19. A controlled electrical signal supply according to claim 18 wherein the output voltage of the digital to analogue converter is controlled by a digital output of a microprocessor programmed to provide a varying digital to analogue converter output voltage thus causing a similarly varying electrical current flow
25 through the area of the subject.

20. A method of controlling the supply of an electrical current to a subject connected to an electrical power supply unit that is in electrical connection with the an area of the subject by at least one active probe and return probe

respectively including a first electrical resistance connected in parallel with the at least one active and return probe and having a controllable variable conductance network connected between the junction of the return probe and the first resistance and a ground reference, the method including the following steps:

- 5 initially controlling the variable conductance network to present a significantly low conductance such that limited current can flow through the area of the subject; and

 subsequently controlling the variable conductance of the network to cause a desired electrical current flow through the area of the subject.